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JB COMMENTS

USGA Root Zone Specialization

Often I hear references to putting greens constructed to "modified USGA specs" or to the "80-20 USGA spec." This naive philosophy most commonly leads to future problems. Unfortunately, many of these difficulties will not appear until 3 to 6 years later, at which time those involved do not relate it to the original construction procedure utilized. Basically, **a minimum of four and preferably five years is required before any conclusions can be drawn concerning the success of a root zone construction system**. This duration of time is required for the soil root zone to consolidate and for a biological ecosystem of bacteria, fungi, actinomyces and nematodes to reach a relatively stable state of equilibrium, thereby forming what is termed a **living root zone**.

It needs to be emphasized that **the USGA specifications are a range and not specific numbers**. Thus, there is built-in flexibility in the sand particle size distribution, plus the percentages of various organic and soil amendment components that may be used, depending on the specific materials available at a given site. **The turf performance criteria for the USGA specifications are achieved only if the root zone is constructed within the specifications**. It is just like constructing a concrete building or an asphalt roadway. In both cases, it is important to stay within the specifications. Otherwise, the long-term performance of these structures usually is lost. The same typically is true in the use of the USGA specifications for root zones.

ASK DR. BEARD

Q *How does crown hydration cause winterkill of turfgrasses?*

A **Crown hydration is not a cause of winter-kill of turfgrasses**. Unfortunately a number of writers and speakers use this incorrect terminology.

Actually, tissue hydration is a physiological change that occurs in turfgrasses under certain conditions. **It results in increased proneness to low-temperature kill at tissue temperatures below freezing**. The basic cause of plant death is ice crystal formation either within or between cells, resulting in mechanical destruction of the critical protoplasmic organization within the individual cells.

One of the more common environmental scenarios in which tissue hydration occurs is during a mid-winter thaw, which commonly occurs sometime in February in locations such as Michigan and Wisconsin. **Typically associated with this thaw period is extensive standing water, which results in tissue hydration. If followed by a rapid freeze to temperatures below 20°F (–7°C)**, then low-temperature kill associated with the higher tissue hydration level is likely to occur. This is especially true of turfgrass species such as annual bluegrass (*Poa annua*), perennial ryegrass (*Lolium perenne*), and tall fescue (*Festuca arundinacea*).

Tissue hydration predisposing the plant to kill may not occur just in the crowns, but applies to all meristematic tissues including the crowns, plus the meristematic nodes on stolons and rhizomes. Thus, for strongly creeping turfgrasses, such as bermudagrass (*Cynodon* spp.), a **more correct terminology would be meristem hydration**.

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